In the Claims:

1. (Currently Amended) A method of sampling communication signals within a mobile satellite payload having a phase array antenna, receive radiating elements, a plurality of low noise amplifiers (LNAs) and a plurality of analog-to-digital (A/D) converters, comprising:

receiving the communication signals with the receive radiating elements and forming received signals;

amplifying said received signals within the plurality of LNAs to form [[an]] amplified received signals ~~signal~~;and

downconverting said amplified received signals into digital baseband signals within the plurality of A/D converters by sampling the amplified received signals at a predetermined sampling frequency fs using A/D converters with an aperture time of 1/A*fs, where A is a constant related to the A/D converters.

2. (Previously Presented) A method as in claim 1 further comprising filtering the amplified received signals within the plurality of A/D converters.

3. (Previously Presented) A method as in claim 1 further comprising sampling the amplified received signals at properly predetermined sampling rates.

4. (Previously Presented) A method as in claim 1 further comprising maintaining the accuracy of said plurality of A/D converters aperture times (α).

5. (Canceled)

6. (Previously Presented) A method as in claim 1 further comprising sampling the received signals at frequencies selected from the following group: super high frequency band (SHF), L-band, S-band, and C-band and frequency bands above C band.

7. (Previously Presented) A method as in claim 1 further comprising automatically filtering said received signals within the plurality of A/D converters.

8. (Canceled)

9. (Currently Amended) A mobile satellite payload comprising:

a phase array antenna, wherein said phase array antenna comprises a plurality of receive radiating elements for forming received signals;

a plurality of low noise amplifiers (LNAs) electrically coupled to said receive radiating elements for amplifying the received signals to form amplified received signals; and

a plurality of analog-to-digital (A/D) converters electrically coupled to said LNAs, wherein said plurality of A/D converters downconverting said amplified received signals into digital baseband signals by sampling the amplified received signals at a predetermined sampling frequency fs using A/D converters with an aperture time of 1/A*fs, where A is a constant related to the A/D converters.

10. (Canceled)

11. (Original) A system as in claim 9 wherein said plurality of A/D converters incorporate the function of a filter.

12. (Original) A system as in claim 9 wherein said plurality of A/D converters operates with various aperture times.

13. (Original) A system as in claim 9 wherein said plurality of A/D converters are able to perform as low pass or band pass filters.

14. (Original) A system as in claim 9 wherein said plurality of A/D converters are able to sample at different predetermined sampling rates.

15. (Currently Amended) A communication system comprising:

an antenna for receiving a received signal;

a low noise amplifier (LNA) electrically coupled to said antenna for amplifying the received signal to form an amplified received signal; and

an analog-to-digital (A/D) converter electrically coupled to said LNA, wherein said A/D converter downconverts the amplified received signal into a digital baseband signal by sampling the amplified received signals at a predetermined sampling frequency fs using a A/D converter with an aperture time of 1/A*fs, where A is a constant related to the A/D converter.

16. (Currently Amended) A method of sampling communication signals within a mobile satellite payload having a phase array antenna, receive radiating elements, a plurality of low noise amplifiers (LNAs) and a plurality of analog-to-digital (A/D) converters, comprising:

receiving the communication signals through the use of the receive radiating elements and forming received signals;

amplifying said received signals within the plurality of LNAs to form amplified received signals;

downconverting said amplified received signals within the plurality of A/D converters;

sampling said amplified received signals within the plurality of A/D converters at a predetermined sampling frequency fs using A/D converters with an aperture time of 1/A*fs, where A is a constant related to the A/D converters;

filtering said amplified received signals within the plurality of A/D converters;

wherein the combination of downconverting, sampling, and filtering said received signals transforms said amplified received signals into digital baseband signals.

17. (Previously Presented) A method as in claim 16 wherein sampling said amplified received signals comprises maintaining the accuracy of said plurality of A/D converters aperture times (α).

18. (Previously Presented) A method as in claim 16 wherein sampling said amplified received signals comprises sampling the amplified received signals at properly predetermined sampling rates.

19. (Canceled)